CALS TEST NETWORK

AFCTN Test Report 94-020

AFCTB-ID 93-053

Technical Publication Transfer

Using:

Draper Laboratory's Data

MIL-M-28001A (SGML)
MIL-R-28002A (Raster)
MIL-D-28003 (CGM)

Quick Short Test Report

01 June 1993

Prepared for

Electronic Systems Center

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01 June 1993

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Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Draper Laboratory's interpretation and use of the CALS standards, in transferring technical publication data. Draper Laboratory used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff via an internet electronic transfer using ftp protocol to the AFCTB Unix server. This was the first electronic transfer test of a complete document.

2. Test Parameters

Test Plan: AFCTB 93-053

Date of Evaluation: 01 June 1993

Evaluator:
George Elwood
Air Force CALS Test Bed
DET 2 HQ ESC/AV-2P
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

Data Originator:
Nan Cook
Draper Laboratory
M/S 35
555 Technology Square
Cambridge MA 02139
(617) 258-4130

Data Description: Technical Manual Test
1 Document Declaration file
1 Document Type Definition (DTD)
1 Text/Standard Generalized Markup Language (SGML) file
1 Raster file
1 Computer Graphics Metafile (CGM) file

Data Source System:

1840

HARDWARE
Sun *Sparc Elc*

SOFTWARE
Sun *0Sv.4.1.3, Open Windows v.3*

Text/SGML

HARDWARE
Sun *Sparc Elc*

SOFTWARE
Interleaf *CALS v.1.0*

Raster

HARDWARE

Macintosh Quadra, *Hawtek Scanmaster 3*

SOFTWARE

Adobe *photoshop v1.0*
Interleaf *Tiff input filter*

CGM

HARDWARE

Sun *Sparc Elc*

SOFTWARE

Interleaf *CALS v.1.0*

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

PC 486/50

AFCTN *Tapetool v1.2.9 DOS*

MIL-M-28001 (SGML)

SUN SparcStation 2

ArborText *ADEPT v4.2.1*
SoftQuad *Author/Editor v2.1*

PC 486/50

Exoterica *XGMLNormalizer v1.2e3.2*
Exoterica *Validator v2.0 EXL*
SoftQuad *Author/Editor v2.1*
McAfee & McAdam *Sema Mark-it v2.3*
Public Domain *sgmls*

MIL-R-28002 (Raster)

SUN SparcStation 2

ArborText *g42tiff*
XSoft *CAPS ccitt2caps v6.0x*
Carberry *CADLeaf Plus v3.1*
AFCTN *validg4*
AFCTN *calstb.475*
IGES Data Anaylsis (IDA) *IGESView v3.0*
Island Graphics *IslandPaint v3.0*

PC 486/50

AFCTN *validg4*
IDA *IGESView Windows*
Inset Systems *HiJaak v2.1*
Inset Systems *HiJaak Window v1.0*
Software Publishing Corporation (SPC) *Harvard Graphics v3.0*
Corel *Ventura Publisher*

MIL-D-28003 (CGM)

SUN SparcStation 2

- XSoft *CAPS cgm2ps v6.0x*
- ArborText *cgm2draw*
- Island Graphics *IslandDraw v3.0*
- Carberry *CADLeaf Plus v3.1*

PC 486/50

- Advance Technology Center (ATC) *MetaView R 1.12*
- ATC *MetaCheck R 2.05*
- SPC *Harvard Graphics v3.05*
- Inset Systems *HiJaak v2.1*
- Inset Systems *HiJaak v1.0 Windows*
- Micrografx *Designer v3.1*
- Micrografx *Charisma v2.1*
- Corel *Ventura Publisher*

Standards Tested:

MIL-STD-1840A
MIL-M-28001A
MIL-R-28002A
MIL-D-28003

3. 1840A Analysis

3.1 External Packaging

The file set arrived at the Air Force CALS Test Bed (AFCTB) via an internet ftp transfer. No physical media arrived.

3.2 Transmission Envelope

The electronic transferred file received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The files were received via electronic transfer without a physical media to evaluate.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file and data file headers. The physical structure of the file set meets the CALS MIL-STD-1840A requirements.

4. IGES Analysis

The file set contained no Initial Graphics Exchange Specification (IGES) files.

5. SGML Analysis

The AFCTB has several parsers available for evaluating submitted DTD and Text files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. These products are used in the development of technical publications and are good

indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings unless specified in the report. Changes to DTD or Text files required by each system are not documented in the report.

The Text and DTD files from this document were evaluated using Exoterica's *Validator* parser. Ten warnings were issued during the evaluation of both files.

The Text and DTD files from this document were tested using Exoterica's *XGMLNormalizer* parser. No errors or warnings were issued during the evaluation of either file.

The Text and DTD files from the tape were evaluated using McAfee & McAdam's *Sema Mark-it* parser. No errors or warnings were issued during the evaluation of either file.

The Text and DTD files from the tape were evaluated using the Public Domain *sgmls* parser. No errors or warnings were issued during the evaluation of either file.

The DTD and Text files meet the CALS MIL-D-28001A specification.

6. Raster Analysis

The file set contained one Raster file. This file was evaluated using the AFCTN *validg4* utility. This program reported that the file meets the CALS MIL-R-28002A specification.

The file was read into the AFCTN *calstb.475* viewing utility. No problems were noted.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The file was converted using ArborText's *g42tiff* utility without a reported error. The resulting file was read into Island Graphics' *IslandPaint*, displayed and printed.

The Raster file was read into Carberry's *CADLeaf* software without a reported error. The images were displayed and printed.

The file was read into IDA's *IGESView* and *IGESView for Windows* without a reported error.

The file was read into Inset Systems' *HiJaak for Windows* without a reported error.

The file was converted using Inset Systems' *HiJaak for DOS* into an IMG format without a reported error. The resulting file was read into Corel's *Ventura Publisher*, displayed and printed.

The Raster file was converted using Rosetta Technologies' *Prepare* without a reported error. The resulting file was read into Rosetta Technologies' *Preview*, displayed and printed.

The Raster file meets the CALS MIL-R-28002A specification.

7. CGM Analysis

The file set contained one CGM file. The file was evaluated using ATC's *MetaCheck* with CALS options. This utility reported that the file meets the CALS MIL-D-28003 specification.

The CGM file was evaluated using the beta AFCTN *validcgm* utility.

The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor and indication of CALS capability. All operations were performed using the default settings.

The CGM file was converted using ArborText's *cgm2draw* utility without a reported error. The resulting file was read into Island Graphics' *IslandDraw*, displayed and printed. When displayed, part of the image was flipped 180 degrees upward. A box was display near the top of the screen that should have been near the bottom.

The file was viewed using ATC's *MetaView* software without a reported error.

The file was read into Carberry's *CADLeaf* software and displayed without a reported error.

The file was read into Inset Systems' *HiJaak for Windows* without a reported error.

The file was imported directly into Island Graphics' *IslandDraw* without a reported error.

The file was imported into the Micrografx *Designer* without a reported error.

The file was imported into SPC's *Harvard Graphics v3.05* without a reported error. Initially the screen background color had to be set to white. When the file was displayed everything appeared to be correct. When sent to the printer, the small blocks inside the larger block were printed in black. This indicates a transparencies issue.

The file was imported into Corel's *Ventura Publisher* without a reported error.

The CGM file was reported as meeting the CALS MIL-D-28003 specification.

8. Conclusions and Recommendations

In summary, the electronic transfer file set, from Draper Laboratory, had no reported errors in the MIL-STD-1840A Document Declaration file or data file headers.

The DTD and Text files meet the CALS MIL-D-28001A specification.

The Raster file meets the CALS MIL-R-28002A specification.

The CGM file meets the CALS MIL-D-28003 specification.

The electronic transfer file set meets the CALS MIL-STD-1840A requirements as define above.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

```
Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release 9 (0)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Mon May 31 14:21:52 1993

MIL-STD-1840A File Catalog

File Set Directory: C:\CTN129\OVERLAND\SET012

                                                                    Page: 1

                                                Record
                                                Format/     Block      Selected/
File Name                 File Type             Length  Length/Total  Extracted
-------------------------------------------------------------------------------
D001                      Document Declaration  D/00256 02048/000000  Extracted
D001C001                  CGM                   F/00080 00800/000000  Extracted
D001G002                  DTD                   D/00256 02048/000000  Extracted
D001R003                  Raster                F/00128 02048/000000  Extracted
D001T004                  Text                  D/00256 02048/000000  Extracted

Catalog Process terminated normally.
```

9.2 Tape File Set Validation Log

```
Air Force CALS Test Network File Set Evaluation - Version 1.2; Release 9 (0)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Mon May 31 14:21:52 1993

MIL-STD-1840A File Set Evaluation Log

File Set: SET012

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: Draper Laboratory, Cambridge,MA
srcdocid: TO12R5-4-251-3
srcrelid: NONE
chglvl: ORIGINAL
dteisu: 19930401
dstsys: Air Force Cals Test Bed, Dayton, OH
dstdocid: TOR5-4-251-3
dstrelid: NONE
dtetrn: 19930528
dlvacc: NONE
filcnt: T1, G1, R1, C1
ttlcls: Unclass
doccls: Unclass
doctyp: Technical Manual
docttl: Automatic Video Switch Assembly

Found file: D001C001
Extracting CGM Header Records...
Evaluating CGM Header Records...

srcdocid: TO12R5-4-251-3
dstdocid: TOR5-4-251-3
txtfilid: W
figid: 0
srcgph: aap
doccls: Unclass
notes: NONE

Saving CGM Header File: D001C001.HDR
Saving CGM Data File: D001C001.CGM
```

```
Found file: D001G002
Extracting DTD Header Records...
Evaluating DTD Header Records...

srcdocid: TO12R5-4-251-3
dstdocid: TOR5-4-251-3
notes: NONE

Saving DTD Header File: D001G002.HDR
Saving DTD Data File: D001G002.DTD

Found file: D001R003
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: TO12R5-4-251-3
dstdocid: TOR5-4-251-3
txtfilid: W
figid: 0
srcgph: gyro
doccls: Unclass
rtype: 1
rorient: 000,270
rpelcnt: 003720,002184
rdensty: 0600
notes: NONE

Saving Raster Header File: D001R003.HDR
Saving Raster Data File: D001R003.GR4

Found file: D001T004
Extracting Text Header Records...
Evaluating Text Header Records...

srcdocid: TO12R5-4-251-3
dstdocid: TOR5-4-251-3
txtfilid: W
doccls: Unclass
notes: NONE

Saving Text Header File: D001T004.HDR
Saving Text Data File: D001T004.TXT

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.
```

```
Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.
```

10. Appendix B - Detailed SGML Analysis

10.1 Parser Log

10.1.1 DTD Log

```
            SGML Document Type Definition Parser
                An SGML System Conforming to
              International Standard ISO 8879
            Standard Generalized Markup Language

Log file: '9353.LOG'
SDO File: 'ctndecl.sdo'
Namecase General is yes.
Namecase Entity is no.
Parsing DTD file: '9353.dtd'

DTD0096: The generic ID ARBTEXT has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID HRULE has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID SHORTTITLE has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID CONTASSURPG has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID REFDOC has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID CFGPGE has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID COVERINDEX has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID STALOC has not been used in any content
         model, inclusion, or as a doctype element.
DTD0096: The generic ID TESTCODE has not been used in any content
         model, inclusion, or as a doctype element.
This DTD conforms to the ISO 8879 standard
DTO file '9353.DTO' created

closing statistics:
    Capacity points:                62104
    Bytes of DTO file string space: 11314
    SGML descriptor blocks:         6396

Document Type Definition is compliant and parsed normally.
Program status code: 0.
```

10.1.2 Text File Log

```
IPA0108:        *** SGML Instance Parser Log File ***
Source Document File:  'i:\9353\d001t004.txt'.
Job File:              '9353.jbf'.
DTD File:              ''.
SGML Declaration File: ''.

Reading File '9353.jbf', File Type 'JOB FILE'.

     Concrete Syntax Settings In Effect For This Parse:
         NAMECASE GENERAL: YES.
         NAMECASE ENTITY:  NO.
         NAMELEN:          32.
         SHORTTAG:         YES.
Closed '9353.jbf', File Type 'JOB FILE'.
Reading File 'i:\9353\d001t004.txt', File Type 'DIRECT INPUT FILE'.
   --> Scanned Up To Line 100 In i:\9353\d001t004.txt.
   --> Scanned Up To Line 200 In i:\9353\d001t004.txt.
   --> Scanned Up To Line 300 In i:\9353\d001t004.txt.
   --> Scanned Up To Line 400 In i:\9353\d001t004.txt.
   --> Scanned Up To Line 500 In i:\9353\d001t004.txt.
   --> Scanned Up To Line 600 In i:\9353\d001t004.txt.
   --> Scanned Up To Line 700 In i:\9353\d001t004.txt.
   --> Scanned Up To Line 800 In i:\9353\d001t004.txt.
Closed 'i:\9353\d001t004.txt', File Type 'DIRECT INPUT FILE'.
Document Parsed Successfully, No Errors or Warnings.
```

10.2 Exoterica Validator Parser Log

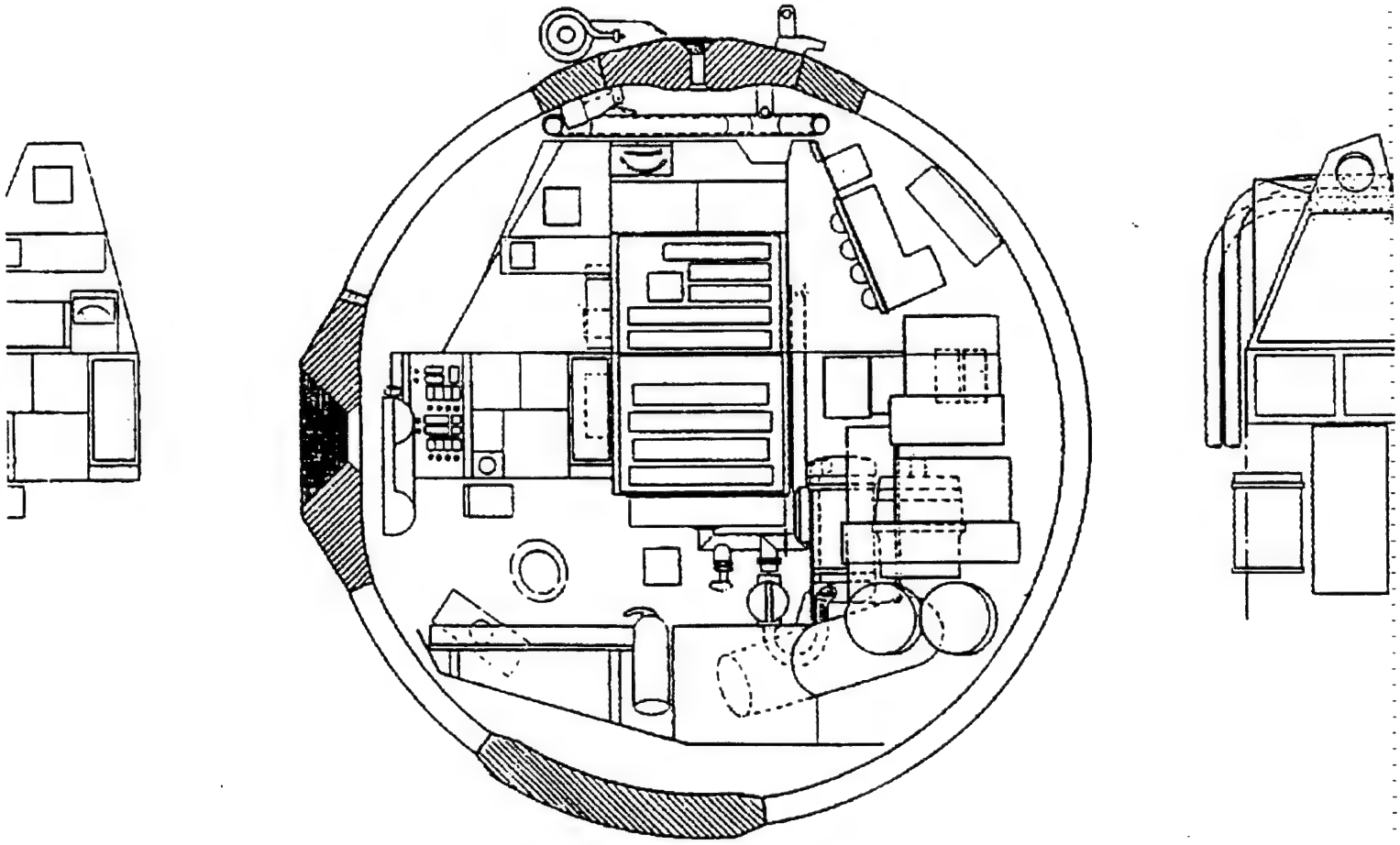
```
<!-- Entity has no name, system id or public id in formal file -->.
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "ARBTEXT".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "CFGPGE".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "CONTASSURPG".
```

```
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "COVERINDEX".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "ENTRYTBL".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "HRULE".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "REFDOC".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "SHORTTITLE".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "STALOC".
-->
<!-- **Warning** in "9353.sgm", line 1397:
   An element is not allowed in the document instance because it does not
   appear in any accessible content model or it is completely excluded.
   The element is "TESTCODE".
-->
<!-- 10 warnings reported. -->
```

11. Appendix D - Detailed Raster Analysis

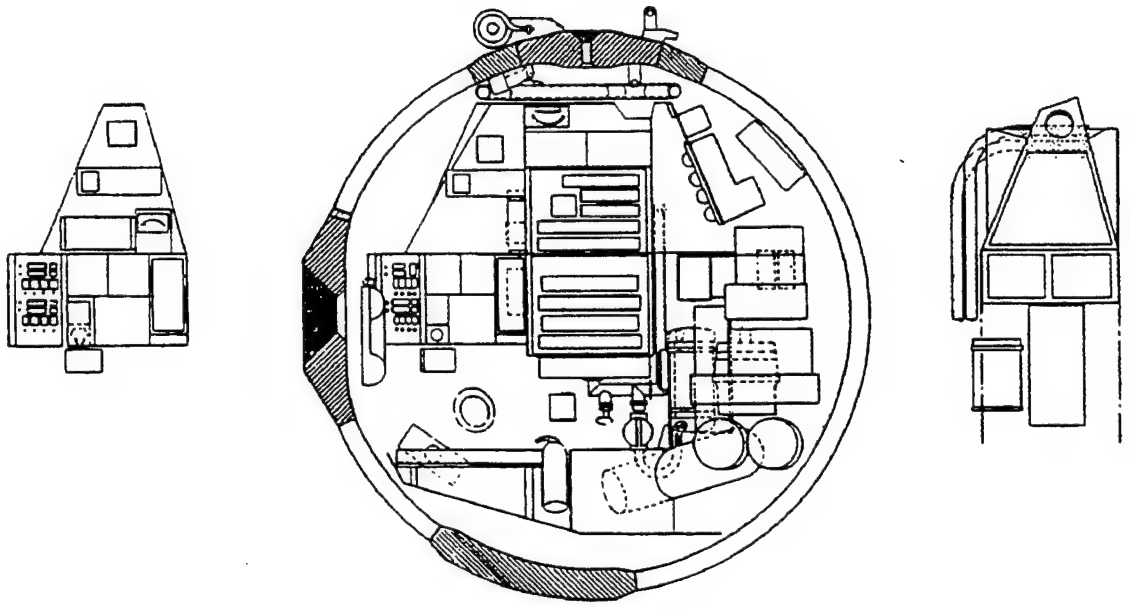
11.1 File D001R001

11.1.1 Output HiJaak for Windows



ELEVATION
LOOKING TO STBD
FWD

11.1.2 Output HiJaak/Ventura Publisher



ELEVATION
LOOKING TO STBD
FWD

12. Appendix E - Detailed CGM Analysis

12.1 File D001C001

12.1.1 Parser Log MetaCheck

```
MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/31/93     Time:  14:48:23

Metafile Examined    : i:\9353\d001c001.cgm

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

======================== Trace Report ========================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report =================

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 05/31/93     Time:  14:48:25

Name of CGM under test: i:\9353\d001c001.cgm
Encoding              : Binary

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

BEGIN METAFILE string : "Created file aap_cgm from aap_cgm.sty"
METAFILE DESCRIPTION  : "Interleaf Inc. MDL/G CGM 1992 ***
                         MIL-D-28003/BASIC-1"
```

```
Picture 1 starts at octet offset 386; string contains: "aap"

Conformance Summary  :  This file conforms to the CGM specification.
                        This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

          1 Pictures Tested
         91 Elements Tested
       1444 Octets Tested

              ================================
              |    No Errors Were Detected    |
              ================================

================ End of Conformance Report ==================
```

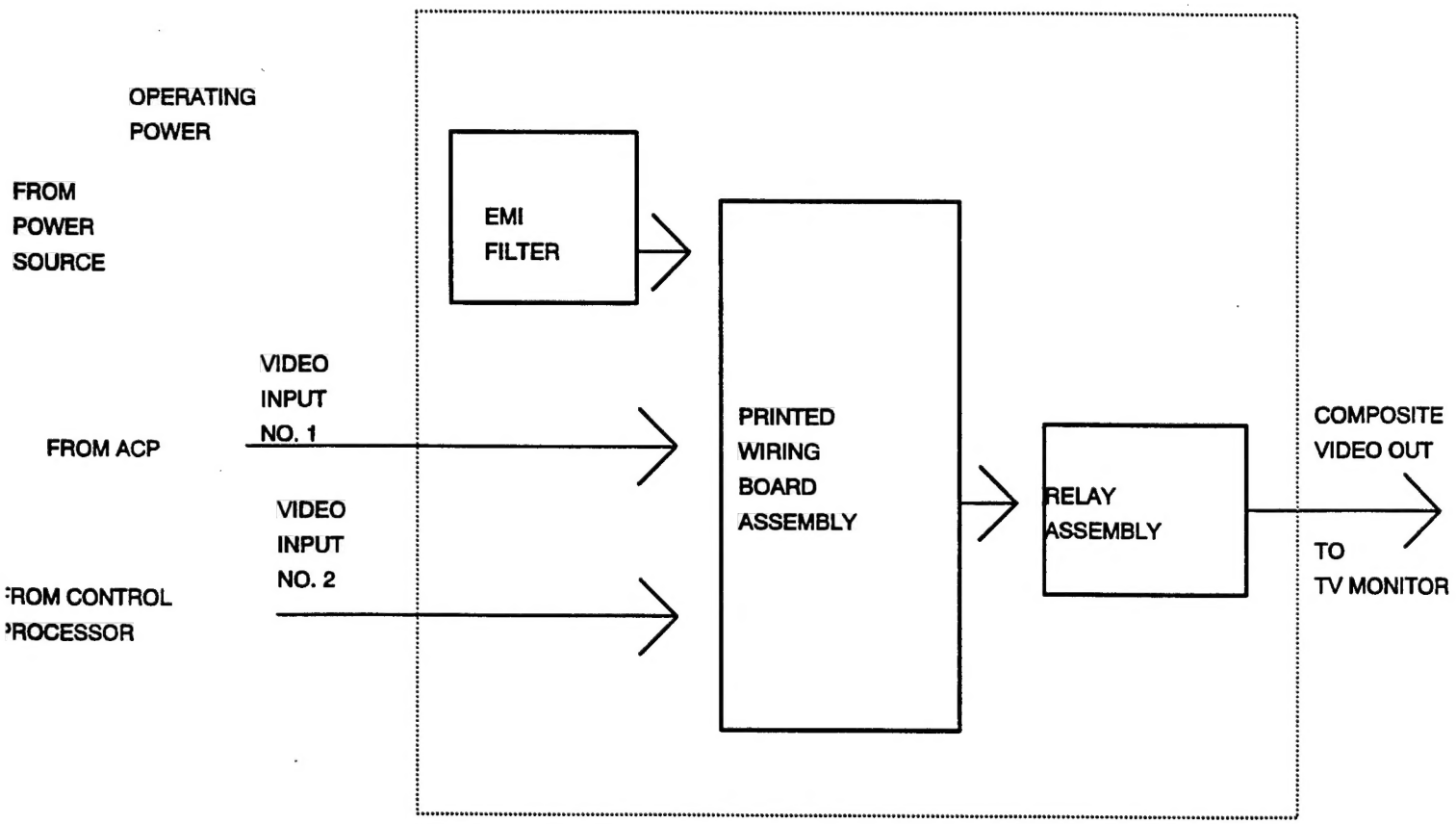
12.1.2 validcgm Log

```
Analysis for file d001c001.cgm using table table
ERROR: invalid times used per CGM (2), std B
ERROR: invalid times used per Picture (2), std B
(14, 254)         (1, 12, 12)     Metafile Defaults Replacement
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 3) not yet seen
(14.1, 0)         (2, 6, 8)       VDC Extent (0, 0) (32767, 32767)
ERROR: invalid times used per CGM (3), std B
ERROR: invalid times used per Picture (3), std B
(15, 270)         (1, 12, 6)      Metafile Defaults Replacement
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 4) not yet seen
(15.1, 0)         (5, 11, 2)      Text Precision  Stroke
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 8) occurred 1 time
(1, 9) occurred 1 time
```

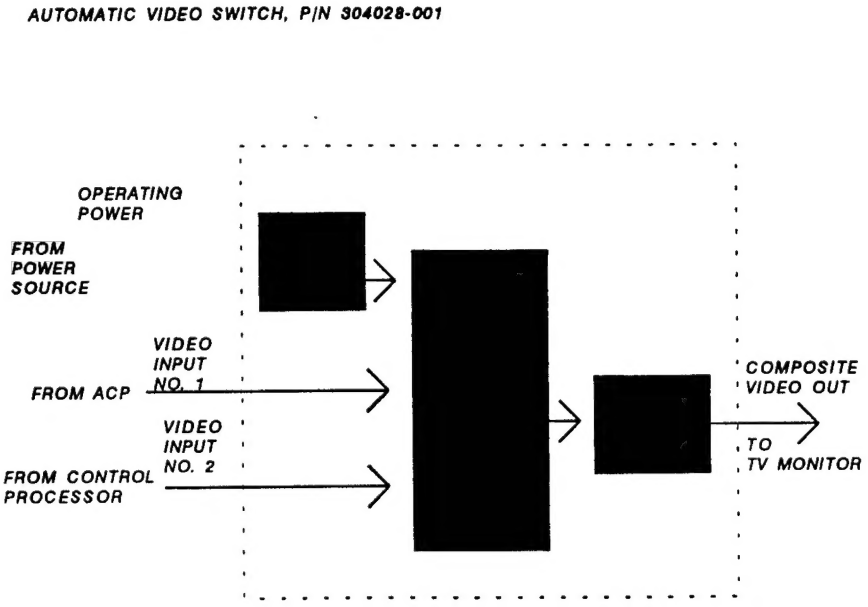
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 3 times
(1, 12) occurred illegally 2 times
(1, 13) occurred 1 time
(1, 15) occurred 1 time
(2, 1) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 4) occurred 1 time
(2, 5) occurred 1 time
(2, 6) occurred 2 times
(2, 6) occurred illegally 1 time
(2, 7) occurred 1 time
(3, 1) occurred 1 time
(4, 1) occurred 15 times
(4, 4) occurred 27 times
(4, 7) occurred 4 times
(5, 3) occurred 2 times
(5, 4) occurred 1 time
(5, 11) occurred 1 time
(5, 11) occurred illegally 1 time
(5, 14) occurred 1 time
(5, 15) occurred 1 time
(5, 16) occurred 1 time
(5, 18) occurred 1 time
(5, 22) occurred 1 time
(5, 23) occurred 2 times
(5, 27) occurred 2 times
(5, 28) occurred 2 times
(5, 29) occurred 1 time
(5, 30) occurred 1 time
(5, 34) occurred 1 time

12.1.3 Designer

AUTOMATIC VIDEO SWITCH, P/N 304028-001



12.1.4 Output Harvard Graphics



12.1.5 Output Ventura Publisher

AUTOMATIC VIDEO SWITCH, P/N 304028-001